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ABSTRACT

This paper reviews the research on preservice learning and recommends guidelines for incorporating learner-centered psychological principles (LCPs) into preservice teacher education. The central theme is that because the preservice teacher's primary role is to learn about teaching, factors which support learning should be incorporated into teacher preparation programs. The research describes studies and commentaries on the content of teacher preparation, the processes of preservice learning, the spheres of preservice learning, and program considerations. Five essential learning dimensions which underlie the LCPs are referenced throughout the review: the learner's knowledge base, strategic processing, student motivation, individual differences, and the learning context. Seven guidelines are proposed: (1) discuss preservice teachers' beliefs about learning and teaching and use constructivist teaching approaches requiring student reflection; (2) utilize case studies for problem-based learning and require participation in action research; (3) model learner-centered teaching practices and create positive climates for learning; (4) include multicultural field experiences; (5) create opportunities for collaboration; (6) clarify and support faculty involvement and develop school-university partnerships; and (7) include in the mission the commitment to teach the content of the LCPs and the research which supports them. (Contains approximately 90 references.) (SM)

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GUIDELINES FOR APPLYING THE LEARNER-CENTERED PSYCHOLOGICAL PRINCIPLES TO PRESERVICE TEACHER EDUCATION

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THE LEARNER-CENTERED

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TO PRESERVICE TEACHER EDUCATION

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ABSTRACT

In 1993, the American Psychological Association identified a set of learner-centered psychological principles (LCPs) based on theories and research from education and the psychology of learning. The purposes of this paper are to review the research on preservice learning and to recommend guidelines for incorporating the LCPs into preservice teacher education. The central theme is that because the preservice student's primary role is to learn about teaching, factors which support learning should be incorporated into teacher preparation programs. The reviewed research describes studies and commentaries on the content of teacher preparation, the processes of preservice learning, the spheres (people and contexts) of preservice learning, and program considerations. Five essential learning dimensions which underlie the LCPs are referenced throughout the review: the learner's knowledge base, strategic processing, student motivation, individual differences, and the learning context. The following guidelines are proposed to address these learning dimensions and provide recommendations for both teacher educators and teacher education programs: (1) discuss preservice teachers' beliefs about learning and teaching and use constructivist teaching approaches that require student reflection; (2) utilize case studies for problem-based learning and require participation in action research during student teaching; (3) model learner-centered teaching practices and create positive climates for learning; (4) include multicultural field experiences; (5) create opportunities for collaboration; (6) clarify and support faculty involvement with student teachers and develop school-university partnerships; and (7) include in the program mission the commitment to teach the content of the LCPs and the research which supports them. The conclusion is that teacher education programs which give attention to the LCPs can better meet the learning needs of preservice students and prepare them to be more effective teachers.

OVERVIEW

In 1993, the American Psychological Association (APA) Task Force on Psychology in Education and the Mid-continent Regional Educational Laboratory (McREL)[1] published a document which described 12 learner-centered psychological principles (LCPs) that are consistent with over 100 years of research on learning and teaching (APA, 1993). The document also identified implications of the principles for school redesign and reform as well as teacher education. In 1997, APA revised and expanded their report to include 14 LCPs designed to "provide an important foundation and a framework for improving the quality of teaching and learning in America's schools" (p. 2). Both documents focused attention on learners and learning as a way of understanding effective instruction.

The purposes of the current paper are to review the research on teacher preparation as it relates to preservice learning and to recommend guidelines for incorporating the LCPs into preservice teacher education. First, there is a description of the meaning of the LCPs and the research base which supports them. Second, there is a discussion of preservice teacher education as involving multiple learning processes in various contexts or settings. Next there is an overview of the research literature in four areas: (a) the content of teacher education curriculum, (b) the processes involved in preservice learning, (c) the influence of people and contexts on teacher education (referred to as spheres of preservice learning) and (d) the implications of programmatic aspects of teacher education. Based on the synthesis of this research, guidelines for applying the LCPs to preservice teacher education are suggested in the last part of the paper. The primary audience for this paper are policymakers in higher education and teacher preparation, but the paper also may be useful for others involved in preservice education including teacher educators, researchers, and K-12 administrators and cooperating teachers.

The main tenant of the paper is that since the primary role of the student in teacher preparation is that of a learner, all aspects of teacher education must align with this role. For teacher candidates to achieve high levels of learning and to perform teaching practices that will maximize the achievement of their future students, teacher education programs need to integrate the research on learners, learning, and effective instruction, as represented by the LCPs, into preservice learning processes and their contexts. Although APA (1993) noted implications of the LCPs for teacher education, most of the suggestions concerned the incorporation of the LCPs into the content of teacher preparation and emphasized the knowledge about learners and learning that preservice teachers should acquire. This current paper expands on these implications using a review of research to support the use of learner-centered concepts in teacher education and by providing guidelines which align teacher preparation with research on preservice learning.

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[1] The name was changed to Mid-continent Research for Education and Learning in 1999.

The Learner-Centered Psychological Principles

The LCPs evolved from an APA sponsored project to identify general principles about learners and the learning process based on the research and theory from psychology, education, and related disciplines (APA, 1993). The principles emphasize internal psychological factors but also consider the influence of external contextual factors in real-world learning situations. The authors of the LCPs cautioned educators to consider the principals as an integrated set of principles that apply holistically to learners, thus suggesting that for maximum effectiveness, applications of individual principles should not occur in isolation. The authors stressed that the LCPs apply to all learners, from pre-school through adulthood, and therefore include all persons involved in education systems- teachers, administrators, teacher educators, and students at every level.

Table 1 lists the most recent version of the LCPs (APA, 1997). In a footnote to the document which describes the 14 principles, the authors stated that

> the development of each principle involved thorough discussions of the research supporting that principle. The multidisciplinary research expertise of the task force and work group members facilitated an examination of each principle from a number of different research perspectives. (APA, 1997)

Thus, it is important to emphasize that the LCPs were developed from the research on learning and teaching, a research base which subsequently was described by Alexander and Murphy in 1998. The goal of Alexander and Murphy's review was to "evaluate the general intention of the learner-centered principles" (p. 28) rather than to assess each principle as exactly stated. As the authors explained:

> Parsed down to their fundamental roots, we hold that the learner-centered principles relate to five essential dimensions of meaningful learning that have been systematically investigated in psychology and related disciplines for decades. Those dimensions are:
>
> 1. the knowledge base,
> 2. strategic processing or executive control,
> 3. motivation and affect,
> 4. development and individual differences, and
> 5. situation or context. (p. 28)

Since these five learning dimensions frame the research which supports the LCPs, the dimensions, rather than the individual LCPs, are referenced throughout this paper. Table 2 shows the premises of each dimension, the applicable LCPs, and examples of relevant research findings.

Table 1
The Learner-Centered Psychological Principles

Principle 1: Nature of the learning process. The learning of complex subject matter is most effective when it is an intentional process of constructing meaning from information and experience.

Principle 2: Goals of the learning process. The successful learner, over time and with support and instructional guidance, can create meaningful, coherent representations of knowledge.

Principle 3: Construction of knowledge. The successful learner can link new information with existing knowledge in meaningful ways.

Principle 4: Strategic thinking. The successful learner can create and use a repertoire of thinking and reasoning strategies to achieve complex learning goals.

Principle 5: Thinking about thinking. Higher order strategies for selecting and monitoring mental operations facilitate creative and critical thinking.

Principle 6: Context of learning. Learning is influenced by environmental factors, including culture, technology, and instructional practices.

Principle 7: Motivational and emotional influences on learning. What and how much is learned is influenced by the learner's motivation. Motivation to learn, in turn, is influenced by the individual's emotional states, beliefs, interests, and goals, and habits of thinking.

Principle 8: Intrinsic motivation to learn. The learner's creativity, higher order thinking, and natural curiosity all contribute to motivation to learn. Intrinsic motivation is stimulated by tasks of optimal novelty and difficulty, relevant to personal interests, and providing for personal choice and control.

Principle 9: Effects of motivation on effort. Acquisition of complex knowledge and skills requires extended learner effort and guided practice. Without learners' motivation to learn, the willingness to exert this effort is unlikely without coercion.

Principle 10: Developmental influences on learning. As individuals develop, they encounter different opportunities and experience different constraints for learning. Learning is most effective when differential development within and across physical, intellectual, emotional, and social domains is taken into account.

Principle 11: Social influences on learning. Learning is influenced by social interactions, interpersonal relations, and communication with others.

Principle 12: Individual differences in learning. Learners have different strategies, approaches, and capabilities for learning that are a function of prior experience and heredity.

Principle 13: Learning and diversity. Learning is most effective when differences in learners' linguistic, cultural, and social backgrounds are taken into account.

Principle 14: Standards and assessment. Setting appropriately high and challenging standards and assessing the learner and the learning process–including diagnostic, process, and outcome assessment– are integral parts of the learning process.

Note. The content of this table is from *Learner-Centered Psychological Principles: A Framework for School Reform and Redesign* by the American Psychological Association, November 1997.

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Table 2
Essential Learning Dimensions of the Learner-Centered Principles (LCPs)

Learning Dimension and [a]LCPs	Premise	Example Research Finding
The Knowledge Base LCP 1, 2, 3, 6, 11, 12, 13	One's existing knowledge serves as the foundation of all future learning by guiding organization and representations, by serving as a basis of association with new information, and by coloring and filtering all new experiences.	Readers' knowledge about human biology affected their strategic processing of analogies that were embedded in expository writing (Alexander & Kulikowich, 1991).
Strategic Processing or Executive Control LCP 4, 5, [b]14	The ability to reflect on and regulate one's thoughts and behaviors is essential to learning and development.	Metacognitive training most helped children who were novices in a content area while traditional knowledge-activation study was best for the experts (Hasselhorn & Korkel, 1986).
Motivation and Affect LCP 2, 6, 7, 8, 9	Motivational or affective factors, such as intrinsic motivation, attributions for learning, and personal goals, along with the motivational characteristics of learning tasks, play a significant role in the learning process.	Learner perceptions of the classroom environment as encouraging and supportive were associated with better academic performance (Ames, 1992).
Development and Individual Differences LCP 10, 12, [b]13	Learning, although ultimately a unique adventure for all, progresses through various common stages of development influenced by both inherited and experiential/environmental factors.	New teachers experienced instructional difficulties when they lacked knowledge about learning patterns that are associated with age (Alexander & Knight, 1993).
Situation or Context LCP 11, 13	Learning is as much a socially shared undertaking as it is an individually constructed enterprise.	Instruction which includes social interaction, such as cooperative learning, enhances learning and performance (Slavin, 1987)

Note. The content of this table is from Alexander and Murphy (1998).
[a]The designation of LCPs for each learning dimension was based on the research review by Alexander and Murphy.
[b]The author of this paper designated the LCP based on the description of the principles by the APA (1993, 1997).

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Preservice Learning

The importance of the learning process in teacher preparation seems obvious, yet much of the recent literature on preservice teacher education, particularly reports from policymakers, has emphasized accountability and the need for stronger teaching standards (National Association of State Boards of Education, 1998) instead of preservice learning opportunities that can promote quality teaching. However, several researchers have advocated the view of teachers as lifelong learners, beginning with preservice education.

John Goodlad (1994), a leader of simultaneous educational renewal for K-12 schools and schools of education, has proposed centers of pedagogy which establish partnerships between schools and universities and which would support "preservice socialization into intellectual life as a teacher" (p. 63). A report for the National Center for Research on Teacher Learning (Feiman-Nemser & Remillard, 1995) described learning as the primary role of teacher candidates and urged teacher educators to understand both the cognitive processes that candidates use in their learning and the influence of the learning conditions. According to the authors, the traditional theory of teacher education as knowledge acquisition in preservice classes followed by transfer of knowledge in K-12 classrooms does not align with the current position that "learning occurs through an interaction between the learner and the learning opportunity" (pp. 21-22). Teacher candidates make sense and learn from all of their experiences in teacher preparation, and preservice learning opportunities should be designed to reflect desired teaching outcomes.

In another approach to prospective teachers' learning, Loughran and Russell (1997) described preservice education as a time for teacher candidates to understand how their beliefs and experineces influence their practices. Based on interviews of teacher education graduates, the authors concluded that preservice education offers opportunities for thinking about teaching and for conceptual changes in approaches to teaching that might not occur again after teacher candidates are in full-time positions. Based on their experiences as teacher educators, Northfield and Gunstone (1997) also emphasized a view of the teacher candidate as a learner of teaching, a role which they find is facilitated by group learning and collaboration with both prospective teachers and teacher educators.

The learning that occurs during preservice education can benefit from a learner-centered approach. The learner-centered model integrates the research on individual learner characteristics with the research on learning processes and effective instruction (Lambert & McCombs, 1998). Thus, learner-centered educators combine knowledge about the individual differences of their students, such as developmental level, background, and previous experience, with knowledge about how humans learn, such as constructive and reflective processes, with knowledge about teaching methods that support learning, such as the use of feedback and cooperative learning groups.

Preservice teachers have the opportunity to participate in a unique learning experience because they will acquire the art and science of teaching in three different but interrelated learning situations: as a student in higher education classes taught by college instructors, as a student teacher supervised by a college instructor and a practicing teacher, and as a preservice teacher of students in a K-12 class assigned for practicum (Figure 1). Each sphere of learning includes a different combination of people and contexts and requires preservice teachers to assume different roles in the

teaching-learning process. Interactions of the three spheres provide additional opportunities for preservice learning among all participants. This integration can be guided by the LCPs.

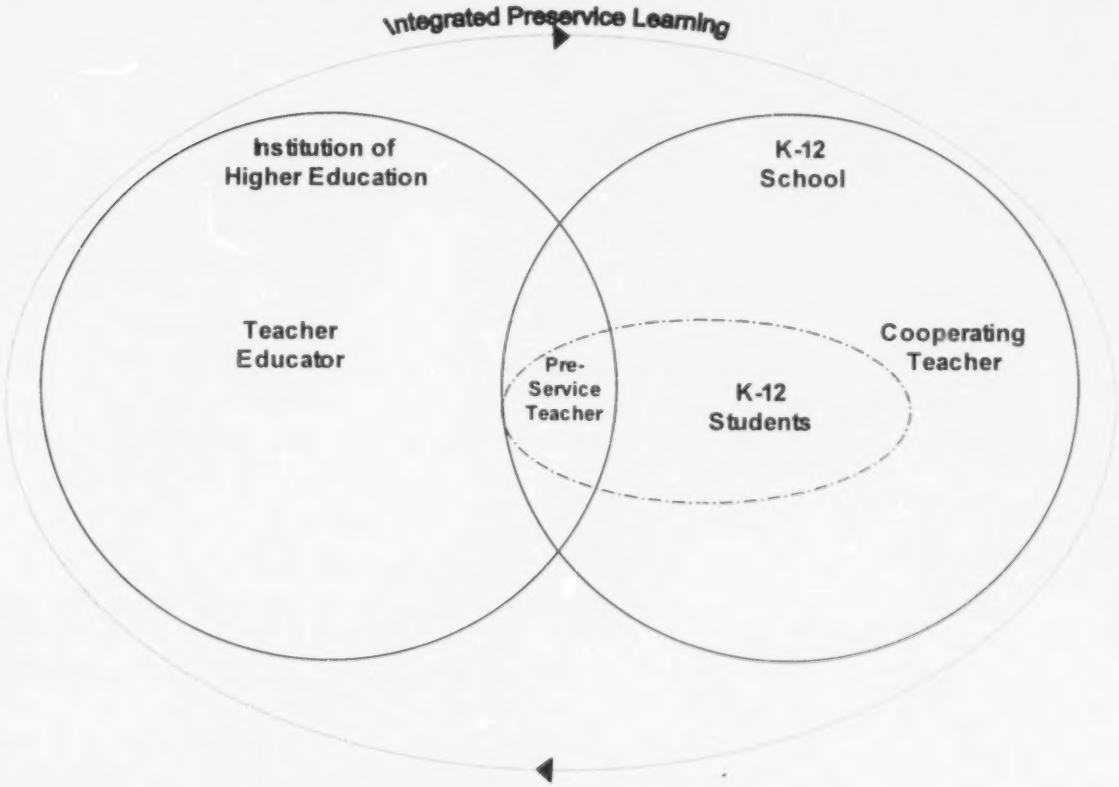

Figure 1. Spheres of preservice learning.

THE CONTENT OF TEACHER EDUCATION

What kinds of content can best support the processes of experience, application, understanding, and improvement that occur for preservice learners? One of the most controversial topics in the research literature concerns the balance between subject knowledge and pedagogical knowledge in teacher education curriculum. The Thomas B. Fordham Foundation, a private foundation that supports research on education reform, has been vocal about the need for a stronger subject matter emphasis in teacher preparation. Finn, the president of the Fordham Foundation, points to federal research which shows that 36% of teachers of core subjects such as math, science, and English had neither a college major nor a minor in those subjects (Finn, 1997). However, other research suggests that while knowledge of subject matter is important to teaching, it does not guarantee good pedagogy in that subject. For example, Ferguson and Womack (1993) cite studies showing that teacher graduates in education are rated higher than liberal arts teacher graduates in

communicating lessons to students and in relating the content to students' interests. Based on other reviews of the influence of in-depth subject matter on teaching, the authors concluded the following:

> In summary, the evidence indicates that while subject matter knowledge is an important prerequisite for effective teaching, it is not sufficient in and of itself and that knowledge beyond what is required for certification does not result in increasing the quality of teaching performance. (p. 56)

Sosniak (1999) commented extensively on the division between subject matter and professional knowledge and suggested that the dilemma is not whether teachers need knowledge of the subject matter but rather how much knowledge is needed and how it should be acquired. The author further pointed out the difficulty of applying the notion of separate disciplines to elementary teacher education. Based on experiences reported by teachers working with the Coalition of Essential Schools, Sosniak suggested that a deeper understanding of the connections among fields of study might be more useful to teachers than a focus on a single discipline.

Schulman's (1986) concept of pedagogical content knowledge has added further to the mix of what teachers need to know. Schulman proposed that in addition to knowing the subject matter, teachers need to know how best to represent the core ideas of that subject to students. But as Sosniak (1999) noted, research has yet to clarify the most effective ways to integrate pedagogical content knowledge into teacher education texts and courses. Sosniak also cautioned against the fragmentation of teacher preparation caused by the current trend in research to identify isolated pieces of pedagogy to add to programs.

Other researchers and teacher educators have supported a pedagogical content which incorporates the concepts of the LCPs. In their discussion of teaching as the management of dilemmas, Smylie, Bay, and Tozer (1999) stressed that to be effective, teachers need to understand the influence of development and culture on student learning and how to design instruction that can engage and connect with students. According to Diez (1999), knowing how to teach involves "linking disciplinary learning with frameworks from developmental and cognitive psychology" and "it invites a focus on learning as making meaning" (p. 227). Darling-Hammond (1996) has been a strong advocate for study of the psychology of learning and child development by students of teacher education. Research studies reviewed by Darling-Hammond have found that teachers who do not have preparation in these areas are:

> more reliant on rote methods of learning, more autocratic in the ways they manage their classrooms, less skilled at managing complex forms of instruction aimed at deeper levels of understanding, less capable of identifying children's learning styles and needs, and less likely to see it as their job to do so, blaming students when their teaching is not successful. (p. 6)

The Holmes Group, in their trilogy of publications on teachers, schools, and schools of education (1986, 1990, 1995), advocated that learning is an active process in which the learner constructs knowledge through experience, engagement, purpose, and participation with other learners. They emphasized that learner-centered education must include understanding how learning

occurs, the influences of individual differences, and how to link current learning activities to prior learning.

Stones (1994) claimed that "the quintessential reform necessary in teacher education is one that takes the study of human learning and its relationship to teaching as central" (p. 312). Data to support this view are presented in results of surveys conducted by the Educational Testing Service on teachers' opinions about the importance of the knowledge base on teaching and learning (Lucas, 1997). Motivational techniques, affective development, and the influence of learner characteristics were among the areas rated most important, areas which also are stressed by the LCPs.

Much of the current concern with the reform of teacher education can be traced to a 1996 report from the National Commission on Teaching and America's Future (NCTAF) which declared that the most important element in children's learning and the achievement of high quality education in America is the "recruiting, preparing, and supporting" (p. vi) of excellent teachers (NCTAF, 1996). NCTAF's recommendations have stimulated debates about the best ways to attain their often quoted goal of "competent, caring, qualified teaching" (p. vi) for every student in America by the year 2006. NCTAF also stressed that the connection between teacher knowledge of how students learn and teachers' abilities to help diverse learners master content is more than merely covering a curriculum. Rather, mastery involves engaging children in complex learning activities such as problem solving, and it means that teachers need to know how to develop different strategies to teach different learners.

According to Darling-Hammond (1998), executive director of NCTAF, research indicates that the most successful teachers have adequate preparation in both subject matter and the art and science of teaching.

> Furthermore, those with greater training in teaching methods are found to be more effective than those with less. Teachers who have spent more time studying teaching are more effective overall, and strikingly so for developing higher-order thinking skills and for meeting the needs of diverse students. (p. 7)

Darling-Hammond emphasized that prospective teachers need opportunities to learn about the latest research on human development and how students learn best, such as understanding the influence of prior learning and the motivational importance of applying new knowledge to real world problems. More recently, Darling-Hammond (1999) summarized the following key features of knowledge needed by twenty-first century teachers that address both subject matter and pedagogy:

- an understanding of subject matter that includes knowledge of how inquiry is conducted in the field and how ideas are connected across subjects, in addition to an understanding of the core knowledge in the field;
- pedagogical content knowledge so that teachers can represent the content of a field to students in a way that considers how to build on their previous experiences;
- knowledge of human development including all aspects of growth-- cognitive, social, physical, and emotional;

- understanding of the influences of individual student differences due to factors such as gender, ethnicity, culture, language, and prior learning experiences and difficulties;
- an understanding of motivation that encompasses how to structure tasks and encourage students while considering their beliefs about themselves and their interests;
- knowledge of different types of learning tasks and the kinds of teaching strategies needed to support them;
- knowledge of how to devise ways and means to assess students which consider their different learning styles;
- a repertoire of teaching strategies that can address the learning needs of individual students, including those with learning disabilities and low language proficiencies;
- knowledge of how to use technology and other resources in connecting students with information beyond their classrooms and textbooks;
- an understanding of how to use processes of collaboration to promote learning, both among students and among teachers; and
- the ability to analyze and reflect on the impact of their teaching practices on student understanding (pp. 223-227).

Thus, researchers and educators have suggested a wide variety of elements to include in teacher preparation programs, but does teacher education content influence teaching? The answer is yes according to the Teacher Education and Learning to Teach study described by Kennedy (1999). Over 100 teachers participating in nine different teacher education programs responded throughout the programs to hypothetical classroom situations involving mathematics and writing. The results indicated that the orientation and content of the programs (traditional or reform) were more important to teacher learning than was the structure of the programs (university-based or field-based). The author stressed that the types of program features that policymakers try to influence might be less important than the content that teacher educators are delivering in their classrooms.

RESEARCH ON PRESERVICE LEARNING

In addition to the research that supports the inclusion of learner-centered pedagogy in teacher preparation curriculum, there is also research on learner-centered applications to the learning processes in which preservice students engage. Seven topics that relate to preservice learning and Alexander and Murphy's (1998) essential dimensions (Table 2) are discussed in this section. The first two topics, teacher beliefs and constructivism, are related to the first learning dimension which concerns the influence of the knowledge base. The next three topics are preservice reflection, the use of case studies, and teacher inquiry, all of which address the second dimension of strategic processing. Next, multicultural education relates to the fourth learning dimension concerning individual differences as well as the fifth dimension which discusses the importance of context and a positive social climate. The final topic is the need for modeling by teacher educators and relates to the motivation of preservice students, the third learning dimension. Although individual learning dimensions are stressed for each topic, in reality, more than one dimension may be involved.

Teacher Beliefs

Feiman-Nemser and Remillard (1995) summarized research that showed that the learning of teacher candidates in teacher education is influenced by the beliefs they have about teaching, learning, subject matter, and students. The authors emphasized that a strong source of candidates' beliefs is the "apprenticeship of observation" (Lortie, 1975) which occurs from spending so many years observing the techniques of their own teachers and which continues as they observe their teacher educators in university classrooms. This notion correlates with Alexander and Murphy's (1998) first essential learning dimension which is the knowledge base, a consideration of the learner's existing knowledge.

Richardson (1996) also called attention to the influence of preservice students' beliefs and suggested that there are group differences in the beliefs of traditional versus nontraditional students and between elementary versus secondary education majors (p. 109). Perhaps most significant is that the vision of teaching held by many prospective teachers is one of transmission of knowledge to passive students who will memorize what is being delivered to them (Feiman-Nemser & Remillard, 1995): this view of learning is contrary to the research which supports the LCPs (Alexander & Murphy, 1998) as well as research on how learning occurs (Bransford, Brown, & Cocking, 1999). Richardson (1996) suggested that when teacher educators do not consider their students' beliefs, clashes between the teacher educator's approach or the program's orientation and the student's beliefs and attitudes can interfere with the learning and even lead to teacher preparation drop-out. Fortunately, as Richardson indicated, it is possible (although difficult) to change preservice teachers' beliefs. Such a change in beliefs can result from studying classroom experiences and contexts, as discussed later in the section on using case studies.

Constructivism

The LCPs define learning as the construction of meaning from information and experience (APA, 1993, 1997), a theory known as constructivism. Alexander and Murphy (1998) discussed constructivism as an aspect of their first learning dimension, the learner's knowledge base. The constructivist approach in education has focused on "the construction of knowledge, knowing, beliefs, and meaning within the minds of individuals and within social communities" (Richardson, 1999, p. 146). If constructivism is accepted as an essential aspect of human learning, then there are implications for preservice student learning, and more importantly, for the instructional practices of teacher educators. As Richardson noted, the lecture/transmission model of teaching does not support the kinds of deep understandings or interactions with ideas and other viewpoints that are necessary for the construction of knowledge. However, the challenge for teacher educators is to develop constructivist teaching that acknowledges differences in the nature of the approach, depending on the subject being taught (Richardson, 1997).

In general, what does constructivist teacher education look like? McIntire, Bird, and Fox (1996) described the following framework as the heart of constructivist teacher preparation:

> The constructivist framework emphasizes the growth of the prospective teacher through experiences, reflection, and self-examination. Constructivist programs

> recognize that teachers are primarily persons who enter the program processing values and beliefs that form the foundation from which they make professional choices. Student teachers within this framework view teaching as ongoing decision making rather than as a product or recipe. These student teachers learn that significant education must present learners with relevant problematic situations in which the learner can manipulate objects to see what happens, to question what is already known, to compare their findings and assumptions with those of others, and to search for their own answers. (pp. 172-173)

The research literature on constructivist teacher education suggests that this approach benefits both preservice students and teacher educators. Loughran and Russell (1997) described data from interviews of teachers who experienced constructivist teaching preparation. The responses of these teachers indicated that their preservice education had helped them integrate their personal beliefs with their classroom experiences, shape their teaching philosophies, and better understand their own teaching practices and their students' learning. In a study of a constructivist graduate teacher education program, Rainer (1999) found that teacher educators also benefitted from sharing and practicing their beliefs in constructivist teaching approaches, in addition to the positive impact that the program had on teacher growth of the education graduate students (Rainer & Guyton, 1998).

Reflection

The second essential dimension of learning which the LCPs represent is strategic processing or the reflection and regulation of thoughts (Alexander & Murphy, 1998). Although reflection has various definitions, reflection applied to teaching is the logical analysis by teachers of their teaching practices and of the contexts of their teaching (Giovannelli, 1999). According to preservice students, reflection improves their instruction. For example, Giovannelli's study of teacher candidates indicated that student teachers' reflections on teaching and learning were positively related to effective teaching in the domains of instructional behavior, classroom organization, and teacher expectations as measured by items taken from the PRAXIS III, a classroom performance assessment developed for teacher licensing (Dwyer, 1994).

Studies also have shown that reflection is important for instigating changes in teaching behaviors and for supporting action research on teaching (Keating, Diaz-Greenberg, Baldwin, & Thousand, 1998). Richert (1997) emphasized that teachers need to act with deliberation and intent which cannot occur without reflection. Concerning types of reflection activities, journaling and discussions are popular approaches with teacher educators, and Burch's (1999) recent report on the use of an electronic study group suggests that technology can be used successfully to facilitate the reflective process. Based on these experiences, Burch (1999) proclaimed that "reflection is key to our work together as professor and students preparing to be teachers. It is the foundation of becoming a thoughtful practitioner, a creative teacher" (p. 166).

The Use of Case Studies

The subject matter for preservice reflection is often the teacher's own practice, but a teacher preparation approach which encourages reflection as well as higher-order thinking and strategic

cognitive processing [recommended by Alexander and Murphy's (1998) second dimension of learning] is the use of case studies. As described by Borko and Putnam (1998), cases "can support the consideration of general principles and factors as they interact in complex ways with practice" (p.54). According to these authors, cases used for group discussion and reflection help bridge the gap between university and K-12 classroom settings. Cases studies of teaching vary on different dimensions. For example, cases can be written or videotaped; the subject matter can be of exemplary teaching practices or classroom problems; and, the contexts of the cases might include a single student or a whole class of students.

Cases can be particularly effective when they encourage the kinds of thinking that are necessary in problem solving since problem-based learning is associated with increased intrinsic motivation and more in-depth learning of information, compared to non-problem solving approaches (Pierce & Jones, 1998). Smylie, Bay, and Tozer (1999) advocated the study of dilemmas as a core experience for teacher candidates. The dilemmas should come from the experiences of practicing teachers and teacher educators and focus on student learning, school reform, and the purposes of education. An example dilemma is how to address the learning needs of students and maintain program coherence when large numbers of the students are experiencing personal crises and stay away from school. In describing the advantages of this approach, the authors stressed that confronting dilemmas forces preservice teachers to consider their beliefs and builds a repertoire of case knowledge that they can apply to future teaching situations. The authors also noted that an approach to preservice preparation that stresses student-teacher interactions more than teacher presentations reflects the current research on learning.

Additional support for case-based teacher preparation was provided by Darling-Hammond and Snyder (1998) who cited research showing that the use of cases strengthened Alaskan teacher candidates' abilities to consider their students' cultural frames of reference in their teaching practices. Ball and Cohen (1999) saw case materials as important for the development of a professional discourse about teaching. For sources, they suggested cases written by teachers, videotapes of teaching, teacher observations, teacher journals, and examples of student work (p. 15). To promote the creation of these materials, Howey and Zimpher (1999) even recommended "a federally supported national competition for the development of case material and teaching protocols around both exemplars of best practice and persistent classroom problems" (p. 285-286).

Teacher Inquiry

In recent years, teacher educators have called attention to the benefits that occur when teachers participate in research. These include an increased understanding of diverse learners, the creation of a bridge between theory and practice, and teacher use of observation and documentation as a source of knowledge instead of reliance on prescribed methods (Darling-Hammond 1996, 1999).

In a review of teachers as researchers, Henson (1996) summarized several definitions of teacher action research, all of which included the notion of systematic inquiry for the purposes of understanding and improvement. Henson documented the following effects of teacher involvement with research: (a) a deeper understanding of pedagogy and subject matter, (b) an increased awareness of effective instruction, (c) a desire to be knowledgeable about the research on current

practices, (d) increased motivation to stay in teaching, (e) more openness to learning about teaching, (f) an increase in critical reflection about teaching practices, (g) improved problem solving skills, (h) increased awareness of students' needs, and (i) a shift from a prescriptive to a more student-interactive teaching style (pp. 57-58).

As described above, the use of teacher inquiry through teacher research includes the learning processes of experience, application, understanding, and improvement and also incorporates Alexander and Murphy's (1998) first four essential learning dimensions. What is the evidence that applying teacher inquiry to teacher preparation positively impacts preservice learning? Teacher educators at California State University in San Marcos documented the effects of integrating collaborative action research into the courses and field experiences of two of their teacher preparation programs (Keating et al., 1998). The authors first described the rationale for using a teacher inquiry approach, citing research showing that preservice teachers who have skills in action research are more objective and less evaluative in their observations of students and are more likely to take actions in their teaching that are informed and justifiable. Next the authors outlined four case studies of student teachers' research projects which illustrated the following positive outcomes experienced by the preservice students: (a) the posing of relevant questions and the use of meaningful methods to answer them, (b) the application of classroom research findings to the student teaching experience, (c) the generation of suggestions for helping teachers to become agents of change in their bilingual classroom communities, and (d) the improvement of learning in mathematics due to a change in instruction. The authors concluded the following: "Preliminary findings suggest that both preservice teachers and supervisors perceived this approach as a powerful strategy for improving their teaching. The findings also suggest that the participants are more likely to use inquiry models in their own teaching" (p. 389).

In another study on the use of action research in teacher education, Kosnik and Beck (1999) summarized the reflections of six teachers who had participated in this approach as part of their teacher preparation in the area of language arts. Although students initially had been skeptical and wanted more prescribed teaching methods, at the end of the project, they all agreed that action research was a beneficial approach and should be continued. The researchers identified the following benefits in student reflections after the students had graduated and were in their first year of teaching: (a) the development of a personal philosophy of education, (b) increased professionalism through the use of data to support decisions, and (c) an appreciation for a student-centered approach to language arts instruction. The reflections additionally highlighted the development of a learning community in the cohort of teacher candidates who were conducting the research. The results of creating these kinds of learning communities were the consolidation of knowledge, improved interpersonal skills, and the experience of working in a collegial environment. Kosnik and Beck cautioned that for preservice action research to be internalized by new teachers, it should be broad in scope (i..e., not just for language arts pedagogy) and the school setting to which the new teacher is assigned should value the teacher-as-researcher role as well as have a student-centered approach to education. Thus, for this teacher preparation program, teacher inquiry was associated with the learning processes that are supported by learner-centered education and the LCPs.

One additional observation about the use of teacher inquiry in preservice education concerns its relation to teaching for social justice. According to Cochran-Smith (1999), "among the most

important goals of teaching and teacher education are social responsibility, social change, and social justice" (p. 114) which concern "issues of educational access, equity, and excellence in a culturally pluralistic society" (p.117). Teaching for social justice is related to Alexander and Murphy's (1998) fourth and fifth learning dimensions which concern the influences of individual differences and the social context. In Cochran-Smith's work as a teacher educator, teacher inquiry is central to learning to teach for social justice since it requires student teachers to pose questions about their teaching experiences, to confront dilemmas, to construct frameworks for understanding, to rethink their assumptions, and to connect their ideas to theories and the experiences of other teachers and researchers (p. 134).

Multicultural Teacher Education

According to the LCPs (APA, 1993, 1997), learning is most effective when linguistic, cultural, and social differences among learners are both considered and valued by teachers in their classroom practices. Currently in the United States, the majority of K-12 teachers are Caucasian females which means that there frequently are differences between the culture, race, and background of American students and that of their teachers (Ladson-Billings, 1999). These demographics have created the need for multicultural teacher education, an area which recently was reviewed by Ladson-Billings and organized into issues of preservice student characteristics and admission procedures, lack of diversity among teacher educators, student resistance to diversity concerns, the influence of cooperating teachers, and the importance of institutional commitment (p. 97). The author referred to Zeichner's (1992) recommendations for multicultural teacher education which can be summarized as: (a) addressing the preservice teacher's beliefs and attitudes toward diverse learners, (b) teaching a curriculum which includes information about diverse groups and the relationships between instruction and assessment strategies which are sensitive to the needs of diverse learners, and (c) participating in field experiences with students of diverse backgrounds. However, Ladson-Billings cautioned that there is a need for research to support the validity of these recommendations.

Zeichner and Hoeft (1996) reviewed research on teacher education practices which are designed to socialize preservice students for teaching diverse students. Studies showed that personal bonding between prospective teachers and ethnic and language minority students is important for a teaching attitude which focuses on student strengths (Larke, Wiseman, & Bradley, 1990) and for the communication of high expectations for students and the use of culturally responsive teaching strategies (Valli, 1994). Attention also should be given to the development of positive teacher-student relationships in teacher preparation as a means of connecting with the motivational needs of diverse students (Wlodkowski, 1995), reflected in the fifth learning dimension on the importance of context and interpersonal relationships (Alexander & Murphy, 1998).

The research on the use of curricular materials to promote an understanding of diversity in preservice students has not provided clear support for this approach (Zeichner & Hoeft, 1996). What seems to be more effective is the encouragement of prospective teachers to see themselves as cultural researchers and to use methods of teacher inquiry to investigate and learn about diverse communities (Darling-Hammond & Snyder, 1998).

What kinds of field experiences promote multicultural education? Burant (1999) noted that some field experiences actually can strengthen stereotypes and that to avoid this result, field experiences should promote the creation of long-term meaningful relationships within a community. Burant described a field experience for preservice students in a large southwestern city. The experience incorporated reflection, inquiry, and teaching actions recorded in portfolios and shared in a community of other preservice learners. Over the course of the field experience, the researcher found shifts in the practices and understandings of prospective teachers who had "made strong personal connections with students of color through involvement in meaningful grass-roots projects in the school" (p. 217). Similarly, Melnick and Zeichner (1995) concluded that "the most effective community experiences are sustained efforts to help prospective teachers learn how to interact in more authentic ways with parents and other adults from different racial and ethnic backgrounds" (p. 10). They emphasized that preservice students need to learn (e.g., through reflective journaling and monitoring by a teacher educator) how to incorporate information about the community, the families, and the students into their teaching practices.

Modeling by Teacher Educators

Loughran and Russell (1997) discussed teacher preparation as a process of conceptual change and referred to the research on science learning by Posner, Strike, Hewson, and Gerzog (1982) as an analogy. According to Loughran and Russell, as in science learning, ideas in teacher education need to make sense, be worth doing, and work in practice (pp. 177-178). Modeling of teacher education programs' goals and intents is critical to the facilitation of conceptual change in preservice learners. Feiman-Nemser and Remillard (1995) described three conditions necessary to facilitate conceptual change in prospective teachers: (a) an understanding of why new ideas and practices are better than traditional ones, (b) the opportunity to see the practices in use, and, (c) the opportunity to experience the practices as learners (p.23).

Howey and Zimpher (1999; Howey, 1995) criticized teacher educators for failing to model in their own classrooms the type of teaching that engenders deep, conceptual learning and suggested that there is a strong relationship between the quality of instruction in teacher education and the instruction that occurs in K-12 schools. Loughran (1997) emphasized that for motivating student teachers to make meaning from their teaching and learning experiences, teacher educators should model "the processes, thoughts, and knowledge, of an experienced teacher in a way that demonstrates the 'why' or purpose of teaching" (p.62).

Thus, applying the LCPs to teacher education requires that teacher educators themselves model the principles in their own teaching practices. Goodman and Fish (1997) demonstrated that an inconsistency between the program's adoption of a student-centered perspective and a faculty member's teacher-centered approach in the classroom undermined some of the students' beliefs about the importance of student voice in education. Michalec (1999) described the influence of faculty modeling in a teacher education program which espoused a social-constructivist perspective. Faculty in this program made deliberate attempts to model constructivist student-centered teaching in their classes and also vocalized to the students the reasons for their classroom practices. The author commented that "a modeling pedagogical relationship created opportunities for ... students that would otherwise not have been available to them" (p.21). However, faculty also adopted

authority-based interactions with the preservice students and used overly prescriptive approaches to assignments. According to Michalec, this led to students' perceptions of a hidden teacher-centered curriculum in the program and to the adoption of a "detached learner" role by students (p.37). More importantly, the teacher-centered practices of the teacher educators were reflected in the students' own teaching in their field experiences. Michalec concluded that this was an example of thoughtfully articulated program goals being countered by the actions of the program participants. It should be noted that because motivation is an essential learning dimension, the detached learner role described in this study indicates how inconsistency between faculty talk and actions can interfere with preservice student motivation.

Wineburg (1991) described how in-class reflection and problem solving by teacher educators can provide a model of these processes for preservice students. A pedagogical error by Wineburg in prematurely ending a class discussion was later analyzed by the instructor and the students for its consequences. The students participated in a lively discussion of the deliberations behind this incident and teacher practices in general. "The incident became a case of thinking in action, a case of the kinds of choices teachers must make amidst a dizzying array of options" (p. 227). This approach also enabled Wineburg to model "learning from mistakes," and it promoted problem solving by the students while improving the climate of the classroom.

Summary of Research on Preservice Learning Processes

The research on preservice learning processes indicates that many factors influence the quality of learning experiences in teacher preparation. The research also suggests how the LCPs, as represented by essential learning dimensions, apply to preservice learning. The research can be summarized as follows:

- Preservice learning is influenced by prospective teachers' beliefs about teaching, learning and students.
- Constructivist teacher education helps preservice learners understand their own teaching philosophies and how students learn.
- Reflection by preservice teachers encourages logical analysis of teaching and supports changes in practice.
- Using cases studies for dilemma analysis and problem-based learning promotes higher-order thinking about teaching and helps bridge the gap between theory and practice.
- Preservice teacher inquiry increases awareness of effective instruction and promotes critical reflection and the improvement of practice based on data.
- Multicultural teacher education which emphasizes interpersonal relationships and involvement with minority students and communities promotes an understanding of the educational needs of diverse learners.
- Modeling of best practices by teacher educators supports preservice teachers' experience and understanding of these practices and enhances motivation to learn.

RESEARCH ON SPHERES OF PRESERVICE LEARNING

As shown earlier in Figure 1, spheres of preservice learning refer to the learning situations in which teacher candidates experience teacher education and which involve different contexts and different people participating in varying roles. The fifth essential dimension of learning described by Alexander and Murphy (1998) and reflected in the LCPs is the influence of the situation and the social context on learning. In this section, research on the spheres of preservice learning is described for five topics, all of which relate to influences from contexts and social interactions within those contexts. First is an area which practicing teachers have identified as problematic in teacher preparation- translating of theory into practice. Second, is the importance of positive interpersonal relationships for learning and motivation. The third topic discussed is the nature of preservice field experiences. The importance of learning through collaboration is emphasized in the fourth topic which is also a critical element in the fifth topic of school-university partnerships.

Translating Theory into Practice

Traditionally, teacher education has been viewed as a two-step process: teaching theory in education courses and practicing this theory during student teaching. Unfortunately, this approach has not resulted in effective teaching based on best practices due to the disconnect between education courses and their application in classrooms (NCTAF, 1996). Teachers prepared in these kinds of programs have difficulty in applying their coursework on theory because they have no way to make connections between what they learned and their own teaching situations. Griffin (1999) cited the common belief of new teachers that their courses in teacher preparation were far less important to their understanding of teaching than their student teaching experiences. According to Griffin, the predominance of practice over theory is due to the linear two-step model described above and which needs serious reconsideration.

> If we expect teachers to be thoughtful about their practice, we should provide opportunities for guided practice to be informed by theory and theory to be tested against guided practice. If we expect teachers to be constantly inquiring into the nature and consequences of their work, we should provide individual and group opportunities to ask serious questions about practice and search for answers *in* practice as well as in theory. (p. 13)

The opportunities to which Griffin (1999) referred concern the contexts in which preservice teachers experience learning and the idea that learning to teach must occur "in situ" (Feiman-Nemser & Remillard, 1995, p. 20). Stones (1994) also saw the integration of theory and practice as critical to the student teaching experience and proposed collaborative pedagogical analysis and teacher inquiry as ways to integrate theory and practice. The collaboration described by Stones included inservice graduate students, experienced teachers, and student teachers who all taught various subjects to various ages of students. The lessons were videotaped and discussed by the participants who also conducted action research on their teaching practices. Although all the participants had initial difficulty in conducting pedagogical analyses, given sufficient time, they were able to adapt and change their teaching to include more creative student-centered approaches.

Positive Interpersonal Relationships

Alexander and Murphy (1998) discussed how learning is constantly influenced by the context in which it occurs, with external conditions acting as filters, often unconscious, of the thoughts and feelings of the learner. The APA (1993, 1997) emphasized the importance of interpersonal relationships to learning and stressed that a positive climate can enhance motivation in the LCPs. Darling-Hammond (1998) commented that

> most effective are those schools or school units that create structures enabling close, sustained relationships among students and teachers. Structures that allow teachers to know students and their families well are associated with increased student achievement, more positive feelings toward self, and more positive behavior. (p. 10)

When educators discuss quality interpersonal relationships in the classroom, the notion of caring is often central to their conceptions. However, caring usually is associated more with virtue and nurturing than with competence (Noddings, 1999; Weinstein, 1998). Noddings suggested that caring in education should be considered through a relational analysis in which (a) the carer is both attentive and receptive to the cared-for, (b) the carer directs motivation and energy away from the self and toward the cared-for, and (c) the cared-for acknowledges the caring (p. 207). Using this framework, Noddings discussed how caring by teachers is related to their competence and suggested that teacher education needs to increase teachers' understanding of subject matter and interdisciplinary connections in order to respond to their students' learning needs. Caring also means treating students with respect and creating a climate of safety in the classroom. In keeping with the LCPs, Noddings urged teachers to question their classroom practices from the following question of care: "Does this practice help me to respond to the needs of these students? of *this* student?" (p. 217). Finally, Noddings urged teacher educators to treat their own students in preservice with care and respect by making it safe to make mistakes and ask questions, by providing personal attention, and by responding to the explicit or implicit learning needs of their preservice students.

Weinstein's (1998) research on prospective teachers' ideas about caring and order further illuminated the need to address the concept of caring in preservice education. In this study, teacher education students equated caring with nurturing, rapport, and accessibility, and they associated classroom order with managerial strategies. Weinstein concluded that teacher education should help prospective teachers develop broader concepts of caring which include the influence of positive relationships on orderly and productive classrooms. Research by Goldstein and Lake (1999) also showed underdeveloped conceptions of caring in preservice students. The authors summarized scholarly definitions of caring as " the establishment of meaningful relationships, the ability to sustain connections, and the commitment to respond to others with sensitivity and flexibility" (p. 2). The students whom they studied exhibited themes of emotion, instinct, and romanticism in their beliefs about caring, and the authors suggested that this oversimplification of caring and its instinctive equation with teaching in the minds of these prospective teachers could lead to their disillusionment with teaching and burnout.

A study by Collinson, Killeavy, and Stephenson (1999) provided additional research on the importance of an ethic of care by teachers. They interviewed exemplary teachers, as identified by

reputation (e.g. recommendations from principals, peers, university faculty), and found that these teachers equated an ethic of care with an ethic of learning. Their practices emphasized respect as the foundation for caring, and they worked hard at making their classrooms places that were conducive to learning for all students. These exemplary teachers promoted positive interpersonal relationships among and between their students as well as between themselves and the students. The researchers reminded policymakers and reformers that a focus on teacher competence must include caring as the motivation for this competence and be supported by teacher skills in human relations.

Preservice Field Experiences

Teachers usually cite their field experiences as the most important part of their teacher preparation, and they frequently fail to see the connections of their coursework and their teacher education assignments to the practice of teaching (Griffin, 1999). Because context is an essential dimension of learning (Alexander & Murphy, 1998), the contexts of field experiences impact the learning of prospective teachers. The learning that occurs during the field experience involves the preservice students, the cooperating teacher, and the university supervisor. In order for preservice students to make meaning out of their activities and interactions within these spheres of learning, the influences of all participants need to be considered.

As indicated in a review by McIntire, Byrd, and Foxx (1996), many researchers have studied the role of the cooperating teacher. Towards the end of the field experience, student teachers' attitudes tend to reflect those of their cooperating teachers and also become more custodial and less focused on student learning. In other words, when the goals of the teacher preparation program conflict with the beliefs and behaviors of the cooperating teacher, the student teacher tends to conform to the views of the latter. According to Lucas (1997), the preservice learning that occurs in university classrooms often is undermined by cooperating teachers, and the teacher candidate learns that "prevailing practice defines the limits of what is possible" (p. 130), an attitude which is not conducive to the reform of instruction.

Particularly disconcerting is research which shows that student teachers' interactions with their cooperating teachers rarely concern instructional strategies or best practices (Lampert, 1999) and that cooperating teachers do not see themselves as teacher educators. Perhaps the reasons for this are the cooperating teachers' lack of training in mentoring, the lack of time for supervising a teacher candidate, and the lack of incentives for performing that role (Lucas, 1997). The issue of training was discussed by McIntire, Byrd, and Foxx (1996) who indicated that when cooperating teachers are given training on instructional supervision, they are more likely to provide feedback to their student teachers.

Researchers also have studied the role of university supervisors in field experiences and criticized some policies that are inherent in many institutions of higher education, particularly institutions which are research oriented. The institutional environment often does not value and reinforce field work by faculty who may then be unwilling to invest significant time in meeting with teacher candidates and cooperating teachers out in the field (Lucas, 1997). Faculty supervisors' input can be important to preservice learning during the field experience, but perhaps their roles need to be redefined. As Koehler's (1984) research demonstrated, university supervisors consider the

resolving of conflicts between the student teachers and the cooperating teachers as primary and not the analysis of teaching practice. In reviewing the research in this area, McIntire, Byrd, and Foxx (1996) concluded the following:

> In summary, a lack of clearly agreed-upon and delineated goals, roles, and responsibilities not only hampers teacher education programs in general but also more specifically hinders the effectiveness of the triad as a supportive alliance to advance the growth and development of the student teacher. (p. 179)

Thus, the authors emphasized that the interactions between and among the participants in this sphere of learning have an important impact. Unfortunately, problems with communication, role confusion, and a lack of reflection often characterize the field experience.

Collaboration

Research on Alexander and Murphy's (1998) fifth essential learning dimension of context indicates that learning is enhanced by collaboration. Fullan, Galluzo, Morris, and Watson (1998) discussed the research on K-12 school restructuring that was synthesized by Newmann and Wehlage (1995) and cited four critical factors which were associated with increased student learning and successful school reform:

- a vision of high-quality student learning;
- significant changes in teaching practice to support this vision of learning;
- school organization capacity;
- external support. (p. 56)

The authors indicated that teacher collaboration in professional learning communities related to achieving each of the above factors was critical to the restructuring.

Within the college classroom, the use of socially interactive approaches by teacher educators can support learning by teacher candidates and is one reason for prospective teachers to proceed through their teacher preparation programs as an intact cohort. Collaboration among preservice learners has been shown to facilitate preservice teacher inquiry (Kosnik & Beck, 1999), multicultural education (Burant, 1999), and the connection of theory to practice (Stones, 1994). Darling-Hammond and Sclan (1996) cited research showing that although inservice teachers are dissatisfied with the low frequency of opportunities for professional interaction, teachers value highly the support they receive from their peers. Based on the importance of teacher collaboration, especially as teachers increasingly must deal with complex issues and diverse student needs, Richert (1997) urged that teacher education programs help prospective teachers develop skills of collegiality.

In Wasley's (1999) proposal of teacher learning as a developmental continuum, collaboration is an important element of each stage and evolves from being interpersonal in nature to inter-organizational. Step 1, Developing a Repertoire of teaching strategies, occurs through experience, understanding, application, and improvement facilitated by feedback from both learners of teaching as well as expert teachers. In Step 2, an Interconnected System of Support, teacher educators

collaborate with teachers in school districts to help develop the teaching repertoire as well as the experiences that will occur during teacher preparation. During Step 3, Teacher Preparation in the First Two Years, teaching faculty and cooperating teachers design a focus on activities and strategies that will help ensure the success of new teacher graduates in their first years of teaching. Step 4 is Mentoring and involves programs designed through the collaboration of teacher unions, districts, and colleges of education to support the role of the teacher as a professional with continuing learning needs. Steps 5 and 6, Professional Development and A Staged Teaching Career, also require collaboration among institutions and the support of mentors, as teachers continue to build more complex instructional repertoires and seek professional certification (pp. 11-13).

What conditions support successful collaborations for teacher preparation? In their research of interdisciplinary programs in early childhood teacher education, Miller and Stayton (1999) cited the institutional climate and culture of the collaborating organizations as critical elements. Interpersonal relationships, faculty teams, and institutional recognition all had positive influences while lack of funding, logistical barriers, and lack of support from administrators negatively influenced the climate for collaboration. Negative influences from the culture were the "forcing" of collaboration, previous institutional lack of support for change toward more collaborative teaching, and a lack of respect and rewards for interdisciplinary approaches. The authors commented that "structures in higher education continue to support isolation, independence, and competition among faculty (p. 300)" and pointed to an institutional reward structure which emphasizes research over teaching as a major barrier to collaborative work among teacher educators. They suggested that the missions of teacher preparation programs should include collaboration and that rewards and administrative and logistical support should be provided for interdisciplinary and collaborative reforms.

School-University Partnerships

One of the most significant changes that occurred in teacher preparation during the 1990s was the creation of partnerships between K-12 schools and the teacher education programs of universities and colleges. Most researchers of teacher preparation trace the origins of the partnership approach to the Holmes Group (1986) who referred to the approach as a Professional Development School (PDS). The Holmes Group described specific features of the PDS, but the term often is used to refer generally to collaborations between schools and universities (or colleges) for the purpose of teacher preparation. Other organizations which support and help organize PDSs are the National Network for Education Renewal (Goodlad, 1994) and the National Center for Restructuring Education, Schools, and Teaching (1993).

A major advantage of the PDS is the connection "between the knowledge and skills taught in the classroom of the education school and their connection in practice" (The Holmes Group, 1995, p.81), a connection which frequently is missing in teacher education programs. It is this opportunity for professional learning in context that is behind NCTAF's (1996) support of PDSs. Levine (1997) listed the following assumptions about learning to teach that underlie the PDS concept:

- There is an important knowledge base about teaching that resides among practitioners.

- Teachers' beliefs about teaching are formed over time and as a result of their own exposure to teaching; in other words, teachers teach the way they have been taught.
- Learning in context will help teachers develop an orientation toward continuous learning in practice.
- Teachers should learn in a collegial setting to generate comfort with public practice and establish habits of conferral.
- Teachers' learning needs to be problem-based to develop a problem-solving orientation toward practice. (p. 65)

These assumptions incorporate several characteristics of learning which are summarized by the LCPs and their essential learning dimensions, particularly the influence of context on learning (see Tables 1 and 2).

Since the school-university partnership is a relatively recent innovation, and many PDSs are still works in progress, there has been more PDS research on the nature of the restructuring which is needed in teacher education than on the approach's effectiveness in improving teaching. Whitford and Metcalf-Turner (1999) noted that at the heart of PDS arrangements are collaboration and the development of a learning community. In discussing the institutional relationships of the partnership, the authors found two conditions necessary for success of the PDS: (a) the blending of the values and cultures of the higher education institution and the schools, and (b) the valuing of the partnership with respect to teacher education and professional development by both institutions as well as by the individuals who are participating in the partnership.

Book (1996) reviewed research which indicates positive effects on K-12 teachers who are participating in PDSs. Benefits included increased feelings of efficacy and empowerment, the assumption of new leadership roles, and the opportunity to participate in teacher inquiry with university researchers. The teacher educators also acquired new learning by assuming teaching roles in the partner schools and by leading collaborative inquiry.

For preservice teachers, the greatest benefit documented to date concerns the interpersonal relationships that the PDS approach supports. A study which compared student teaching in a PDS with a traditional student teaching arrangement found that the PDS students were more positive about the experience due to greater feedback and integration of theory with practice than were the traditionally prepared students (Yerian & Grossman, 1993). In related research, Teitel (1997) studied the changes that occurred in some PDS programs over a five year period and was impressed with the positive influences of the PDS on the triad relationships among the university supervisors, cooperating teachers, and student teachers. From participating in PDS professional development, the cooperating teachers became better role models and also worked more collaboratively with the student teachers. The university supervisors developed stronger relationships with the individuals at the partner schools and increased their contact and involvement there. On a related point, Rhodes and Bellamy (1999) cited co-teaching by student and cooperating teachers as a PDS arrangement that benefits both the teacher candidate and the K-12 students who then receive additional adult attention.

Among the challenges or obstacles associated with restructuring for school-university partnership are the development of trusting collaborative relationships, the need for professional development of expertise among both partners, the traditional reward structures of both institutions, the required financial investment, and the balance between quality control and local initiative (Swanson, 1995). The creation of collaborative and trusting relationships is often cited as the most difficult challenge due to the disparate cultures of the school and university. A strategy for bridging the difference is the creation of cross-institutional roles or boundary-spanners. Sandholtz and Finan (1998) described these participants as persons who are comfortable with and knowledgeable about the cultures--language, reward systems, ideas--of both of the collaborating institutions and who can provide links between the two. Examples of boundary-spanning roles provided by the authors were co-teaching with university professors, co-directing a collaborative research grant, and belonging to the project management team. The characteristics of boundary-spanners which supported the PDS were allegiance to the goals of the partnership, acceptance of varying time demands, a focus on intrinsic rewards from their work, an emphasis on interpersonal relationships, and a long-term view of the PDS (pp. 23-24).

Burstein, Kretschmer, Smith, and Gudoski (1999) also emphasized the critical role that the boundary-spanner plays in the PDS. The cross-institutional role these researchers described was a special position created for three university faculty and one K-12 teacher, and the job was to guide and coordinate the activities of the collaborative partnership. The researchers saw the position as boundary-spanning because these persons attended planning meetings, coordinated partnership activities, and worked jointly to confront challenges. "Without such support, it is unlikely school-university partnerships can succeed. These positions are the glue holding partnerships together; they are critical to the redesign of teacher education" (p. 116).

In their report summarizing teacher education reform, Fullan et al. (1998) concluded that the Holmes Group introduced teacher education reform "but it was not substantially acted on" (p. 69). The reason is that

> we are dealing with a reform proposition so profound that the teaching profession itself, along with the cultures of schools and schools of education, will have to undergo total transformation in order for substantial progress to be made--that the agenda is much, much deeper than many realize. (p. 68)

Thus, teacher preparation reform is inevitably connected to reforms in the nation's K-12 schools and districts.

Summary of Research on Spheres of Preservice Learning

The research described in the previous section demonstrates important influences from different spheres of preservice learning. The people and contexts of teacher preparation impact the learning of preservice students. The research can be summarized as follows:

- The opportunity to translate theory into practice is integral to effective teacher preparation.

- The promotion of positive interpersonal relationships enhances motivation for preservice learning, and the development of an ethic of care is an important element for teacher competence.
- The field experiences of preservice teachers are critical to their preparation but often are hampered by a lack of coordination among inservice teachers and university faculty.
- Collaboration throughout teacher preparation, including among and between teacher candidates, teacher educators, and inservice teachers, enhances preservice learning.
- School-university partnerships provide positive field experiences for teacher candidates due to the benefits from collaboration, but institutional differences create challenges to their formation.

PROGRAM CONSIDERATIONS

There are many important issues concerning program features of teacher education which are not related directly to the LCPs but which have been topics for debate, discussion, and to some extent research. Examples include the length of time that teachers should devote to preparation, the need for a graduate degree, and the nature and intensity of field experiences. However, two program topics that are related to the application of the LCPs to preservice teacher education are the implementation of standards for teacher preparation and the use of principles in the design of teacher education programs.

Standards for Teacher Education

In the view of NCTAF (1996), to redesign teacher education, it is necessary to "organize teacher education and professional development programs around standards for teachers and students" (p. 76). In this era of accountability in education, content standards for K-12 students have translated into performance standards for teachers. There are different views on whether requiring certification based on teaching standards improves teaching and ultimately student learning. However, in terms of learner-centered teaching, the current national standards for teachers and teacher preparation align with the LCPs which, as discussed in previous sections, support learning and motivation in preservice education. For example, the National Board for Professional Teaching Standards (NBPTS) are based on five propositions:

1. Teachers are committed to students and their learning.
2. Teachers know the subjects they teach and how to teach those subjects to students.
3. Teachers are responsible for managing and monitoring student learning.
4. Teachers think systematically about their practice and learn from experience.
5. Teachers are members of learning communities. (NCTAF, 1996)

Standards from the National Council for Accreditation of Teacher Education (NCATE) require schools of education to include a strong and current knowledge base that will educate

teachers about effective learning and teaching strategies and prepare them to work with diverse students (NCTAF, 1996). To meet these standards, teacher education institutions must require their students to demonstrate performance of the teaching skills which they learned as a result of their preparation. The NCATE standards currently are being revised to include a performance-based accreditation in which education schools will be judged by the performances of their students in K-12 schools ("Proposed Guidelines Set Bar," 1999). Thus, both National Board and NCATE standards are based on the premises of the LCPs, such as the centrality of learning, the importance of monitoring and regulation of thinking and learning, the influences of context and interpersonal relationships, and the need to attend to individual differences and diverse learners.

A standards-based system for teacher preparation has received support from federal and non-federal policymakers. For example, the National Association of State Boards of Education has endorsed this approach for the accreditation of teacher preparation programs (NASBE, 1998). However, there are those who disagree with the implementation of standards as a way to improve teacher preparation. The view of the Thomas B. Fordham Foundation (1999) is that the standards emphasize the wrong things and discourage persons from entering teaching and that instead there should be more venues for alternative certification as well as more local school and district input. Others are concerned about the extra preparation time associated with the standards which might deter students and have suggested that politics influences whether programs pass NCATE standards as much as educational quality does (Ballou & Podgursky 1997). Stone's (1999) criticism of NCATE standards is that they de-emphasize the relationship between teaching and student achievement and instead celebrate a learner-centered approach to pedagogy, which the author claims is opposite to what the public wants. This criticism assumes that achievement-oriented and learner-centered teaching are incompatible. However, as described earlier, the LCPs are based on research which shows that learner-centered teaching supports the student motivation and learning that are necessary for achievement (Alexander & Murphy, 1998).

Andrew (1997) provided a different perspective by suggesting that national teacher education standards serve a gatekeeping function and will not improve teacher preparation beyond the minimum. To achieve improvement, standards of best practice in teacher preparation should be identified, for without these, the danger is that a teach-to-the-test mentality could occur and even lead to the "dumbing down" (p. 176) of teacher education. Andrew proposed that experts at institutions which excel in the areas of needed change in teacher education identified by NCTAF (1996) should be identified and lead an "Academy of Resources" (p. 175) for teacher preparation programs seeking reorganization.

The Use of Principles in the Design of Teacher Education Programs

According to Sosniak (1999), teacher preparation should reflect the purposes of K-12 education in democratic societies and the values of its citizens. Since principles reflect values, Sosniak encouraged teacher educators to adopt statements of principles to guide program organization and curriculum and suggested that decisions about program components are less a matter of technical merit and research demonstration than a reflection of how to serve values about teaching and learning. Tom (1997) also urged the use of principles to provide specific guidance for program reform for both the conceptual and structural design of teacher preparation programs. Three

of the five conceptual principles proposed by Tom were discussed in this paper: the need for modeling by teacher educators, the importance of multicultural education, and inclusion of the moral dimension of teaching (p.97).

Bullough (1997) described principles in teacher education as "guiding assumptions or fundamental beliefs" (p. 13) which sustain teaching practice. The author delineated some principles about teacher education which translated into methods, materials, and research topics for teacher educators. (Several of the principles are related to the LCPs including an emphasis on collaboration, learning in context, and the importance of reflection.) Thus, the use of principles in teacher education can guide the policies, curriculum, and organization of teacher preparation programs as well as support the teaching practices of teacher educators.

Summary of Program Considerations

Two aspects of teacher preparation programs that are related to learner-centered approaches to educating teachers were discussed.

- Current standards for teaching, such as those formulated by NBPTS and NCATE, include concepts which the LCPs support.
- The adoption of principles by teacher education programs can guide policies, curriculum, and teaching practices by reflecting values and beliefs about learning and teaching.

CONCLUSIONS

The original description of the LCPs (APA, 1993) was accompanied by a summary implications for instruction, curriculum, assessment, instructional management, parent and community involvement, school redesign, and teacher education. As was mentioned in the overview of this paper, most of the APA's suggestions for teacher education concerned the need to incorporate the LCPs into the content of teacher preparation and emphasized the knowledge of learners and learning that preservice teachers should acquire. Other researchers also have discussed the role of the LCPs in teacher preparation.

McCombs' (1998) suggested that metacognition, affect, and motivation should be integrated into teacher education content. The author recommended an emphasis on " (a) teacher qualities and relationships, (b) strategies such as goal setting for promoting the personal relevance and meaningfulness of learning experiences, and (c) empowerment approaches directed at enhancing students' recognition of their personal agency" (p.389). McCombs cited research which demonstrated the importance of these areas for enhancing the learning and motivation of K-12 students.

Marshall (1998) suggested incorporating the LCPs into teacher education by including learner-centered and constructivist perspectives in educational psychology courses. Marshall's recommendations were to (a) provide multiple examples of the LCPs being applied in K-12 classrooms and promote discussions of these examples; (b) use activities which encourage reflection

and higher-order thinking; (c) require field experiences, preferably in learner-centered classrooms, that are concurrent with participation in the educational psychology class; (d) use a variety of case materials to stimulate class discussions; and, (e) create a safe and caring environment in the educational psychology classroom.

Proposed Guidelines for Applying the LCPs to Preservice Teacher Education

The following proposed guidelines are broader in their applications than were previous recommendations. The proposed guidelines are based on the research described in this paper which shows that the primary role of the student in preservice education is to learn about teaching. The first five guidelines align with the five essential learning dimensions which incorporate the LCPs (Alexander & Murphy, 1998). The two additional guidelines are program recommendations which support a learner-centered approach to teacher preparation.

1. *To address the knowledge base of preservice learners*, (a) identify and discuss the beliefs that preservice teachers hold about teaching, learning, and learners, (b) use constructivist teaching approaches which help preservice students shape their philosophies of teaching, and (c) require preservice students to reflect on how their teaching practices relate to theory and content.
2. *To promote strategic processing and higher-order thinking*, (a) use case studies based on real-world teaching experiences that pose dilemmas and promote problem-based learning, and (b) incorporate action research into the student teaching experience.
3. *To enhance preservice students' motivation to learn*, (a) model instruction in teacher education classes which is consistent with the LCPs and the program's mission, and (b) create safe and positive climates in teacher education classes while promoting the understanding of an ethic of care.
4. *To prepare teacher candidates to address the needs of diverse learners*, include multicultural field experiences in education that create meaningful relationships between preservice students and members of minority communities.
5. *To enhance the preservice learning that occurs within different spheres of learning in teacher education*, create opportunities for collaboration among preservice teachers, teacher educators, and inservice teachers.
6. *To help student teachers improve their instructional practices*, (a) increase communication between university supervisors and cooperating teachers and clarify respective roles, (b) provide institutional support for involvement with field experiences, and (c) develop school-university partnerships which create learning communities and are facilitated by boundary-spanners who can bridge institutional differences.
7. *To emphasize the importance of preservice learning*, include in the mission of teacher education programs the commitment (a) to teach the content of the LCPs and the research which supports learner-centered instruction, and (b) to teach preservice students in ways that are consistent with the LCPs.

The research on the processes and spheres of preservice learning suggest that implementing these guidelines can promote effective teacher preparation. However, it is important to remember that although the reported research addressed individual learning dimensions, in actual learning situations, neither the dimensions nor the LCPs can be considered in isolation (APA, 1993; Alexander & Murphy, 1998). For example, a constructivist teaching approach must adapt to the individual differences of the learner and the context of the learning situation. Thus, it is through simultaneous attention to the factors which influence preservice learning that teacher candidates can be prepared to teach effectively and support the learning of their own students. Implementing the set of guidelines proposed for a learner-centered approach to teacher education can help teacher preparation programs holistically meet the learning needs of preservice students.

REFERENCES

Alexander, P. A., & Knight, S. L. (1993). Dimensions of the interplay between learning and teaching. *Educational Forum, 57*, 232-245.

Alexander, P. A., & Kulikowich, J. M. (1991). Domain knowledge and analogic reasoning ability as predictors of expository text comprehension. *Journal of Reading Behavior, 23*, 165-190.

Alexander, P. A., & Murphy, P. K. (1998). The research base for APA's learner-centered psychological principles. In N.M. Lambert & McCombs, B.L. (Eds.), *How students learn: Reforming schools through learner-centered education* (pp. 25-60). Washington, DC: American Psychological Association.

Ames, C. (1992). Achievement goals and the classroom motivational climate. In D. H. Schunck & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 327-348). Hillsdale, NJ: Erlbaum.

Andrew, M. D. (1997). What matters most for teacher education. *Journal of Teacher Education, 48* (3), 167-176.

APA Board of Educational Affairs (1997, November). *Learner-centered psychological principles: A framework for school reform and redesign.* Washington, DC: American Psychological Association.

APA Task Force on Psychology in Education (1993, January). *Learner-centered psychological principles: Guidelines for school redesign and reform.* Washington, DC: American Psychological Association and the Mid-continent Regional Educational Laboratory.

Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In Darling-Hammond, L., & Sykes, G. (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 3-32). San Francisco, CA: Jossey-Bass Publishers.

Ballou, D., & Podgursky, M. (1997). Reforming teacher training and recruitment. *Government Union Review, 17*(4).

Bullough, R. V. (1997). Practicing theory and theorizing practice in teacher education. In Loughran, J., & Russell, T. (Eds.), *Teaching about teaching : Purpose, passion and pedagogy in teacher education* (13-31). Washington, DC: The Falmer Press.

Book, C. L. (1996). Professional development schools. In Sikula, J., Buttery, T. J., & Guyton, E. (Eds.), *Handbook of research on teacher education* (pp. 194-210). New York: Simon & Schuster Macmillan.

Borko, H., & Putnam, R. T. (1998). The role of context in teacher learning and teacher education. In Ohio State University & Bowling Green State University (Eds.), *Contextual teaching and learning: Preparing teachers to enhance student success in and beyond school* (pp. 35-74). Washington, DC: ERIC Clearinghouse on Teaching and Teacher Education.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds). (1999). *How people learn: Brain, mind, experience, and school.* Washington, DC: National Academy Press.

Burant, T. J. (1999). Finding, using, and losing (?) voice: A preservice teacher's experiences in an urban educative practicum. *Journal of Teacher Education, 50* (3), 209-219.

Burch, C. B.(1999). When students (who are preservice teachers) don't want to engage. *Journal of Teacher Education, 50* (3), 165-172.

Burstein, N., Gudoski, P., Kretschmer, D., & Smith, C. (1999) Redesigning teacher education as a shared responsibility of schools and universities. *Journal of Teacher Education, 50* (2),106-118.

Cochran-Smith, M. (1999). Learning to teach for social justice. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 114-144). Chicago, IL: University of Chicago Press.

Collinson, V., Killeavy, M., & Stephenson, H. J. (1999). Exemplary teachers: Practicing an ethic of care in England, Ireland, and the United States. *Journal for a Just and Caring Education, 5* (4).

Darling-Hammond, L. (1996). The quiet revolution rethinking teacher development. *Educational Leadership, 53* (6), 4-10.

Darling-Hammond, L. (1996). The right to learn and the advancement of teaching: research, policy, and practice for democratic education. *Educational Researcher, 25* (6), 5-17.

Darling-Hammond, L. (1998). Teachers and teaching: Testing policy hypotheses from a national commission report. *Educational Researcher, 27* (1), 5-15.

Darling-Hammond, L. (1999). The case for university based teacher education. In Roth, R. A. (Ed.), *The role of the university in the preparation of teachers* (pp. 13-30). Philadelphia, PA: Falmer Press.

Darling-Hammond, L., & Sclan, E. M. (1996). Who teaches and why: Dilemmas of building a profession for twenty-first century schools. In Sikula, J., Buttery, T. J., & Guyton, E. (Eds.), *Handbook of research on teacher education* (pp. 67-101). New York: Simon & Schuster Macmillan.

Darling-Hammond, L., & Snyder, J. (1998). Authentic assessment of teaching in context. In Ohio State University & Bowling Green State University (Eds.), *Contextual teaching and*

learning: Preparing teachers to enhance student success in and beyond school (pp. 253-294). Washington, DC: ERIC Clearinghouse on Teaching and Teacher Education.

Diez, M. E. (1999). Critical components in the preparation of teachers. In Roth, R. A. (Ed.), *The role of the university in the preparation of teachers* (pp. 226-240). Philadelphia, PA: Falmer Press.

Dwyer, C. (1994). *Development of the knowledge base of the Praxis III: Classroom performance assessments criteria.* New Jersey: Educational Testing Service.

Feiman-Nemser, S., & Remillard, J. (1995). *Perspectives on learning to teach* (Report No. NCRTL-RR-95-3). East Lansing, MI: National Center for Research on Teacher Learning.

Ferguson, P., & Womack, S. T. (1993). The impact of subject matter and education coursework on teaching performance. *Journal of Teacher Education, 44* (1), 55-63.

Finn, C. E. (1997). *The real teacher crisis* [WWW document]. Available: http://www.edweek.com/ew/vol-17/09finn.htm

Fullan, M., Galluzzo, G., Morris, P., & Watson, N. (1998). *The rise and stall of teacher education reform.* Washington, DC: American Association of Colleges for Teacher Education.

Giovannelli, M. (1999, April). *The relationship between disposition toward teaching and effective teaching.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

Goldstein, L. S. (1999, April). *Preserve teachers' understandings of caring.* Paper presented at the meeting of the American Educational Research Association Annual Meeting, Montreal, Canada.

Goodlad, J. I. (1994). *Educational renewal: Better teachers, better schools.* San Francisco, CA: Jossey-Bass Publishers.

Goodman, J., & Fish, D. R. (1997). Against-the-grain teacher education: A study of coursework, field experience, and perspectives. *Journal of Teacher Education, 48* (2), 96-107.

Griffin, G. A. (1999). Changes in teacher education: Looking to the future. In Griffin, G. A. (Ed.), *The education of teachers.* (1-28). Chicago, IL: University of Chicago Press.

Hasselhorn, M., & Korkel, J. (1986). Metacognitive versus traditional reading instruction: The mediating role of domain specific knowledge on children's text processing. *Human Learning, 5*, 79-90.

Henson, K. T. (1996). Teachers as researchers. In Sikula, J., Buttery, T. J., & Guyton, E. (Eds.), *Handbook of research on teacher education* (pp. 53-64). New York: Simon & Schuster Macmillan.

The Holmes Group. (1986). *Tomorrow's teachers.* East Lansing, MI: Author.

The Holmes Group. (1990). *Tomorrow's schools: Principles for the design of professional development.* East Lansing, MI: Author.

The Holmes Group. (1995). *Tomorrow's schools of education.* East Lansing, MI: Author.

Howey, K. (1995). The United States: The context for restructuring and reconceptualization of teacher preparation. In Wideen, M., & Grimmett, P. (Eds.), *Changing times in teacher education* (pp. 19-33). Washington, DC: Falmer Press.

Howey, K. R., & Zimpher, N. L. (1999). Pervasive problems and issues in teacher education. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 279-305). Chicago, IL: University of Chicago Press.

Keating, J., Diaz-Greenberg, R., Baldwin, M., & Thousand, J. (1998). A collaborative action research model for teacher preparation programs. *Journal of Teacher Education, 49* (5), 381-390.

Kennedy, M. M. (1999). The role of preservice teacher education. In Darling-Hammond, L., & Sykes, G. (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 54-85). San Francisco, CA: Jossey-Bass Publishers.

Koehler, V. (1984, April). *University supervision of student teaching.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Kosnik, C., & Beck, C. (1999, April). *Looking back: Six teachers reflect on the action research experience in their teacher education program.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

Ladson-Billings, G. (1999). Preparing teachers for diversity: Historical perspectives, current trends, and future directions. In Darling-Hammond, L., & Sykes, G. (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 86-123). San Francisco, CA: Jossey-Bass Publishers.

Lambert, N. M., & McCombs, B. L. (1998). Introduction: Learner-centered schools and classrooms as a direction for school reform. In Lambert, N. M., & McCombs, B. L. (Eds.), *How students learn: Reforming schools through learner-centered education* (pp. 1-22). Washington, DC: American Psychological Association.

Lampert, M. (1999). Knowing teaching from the inside out: Implications of inquiry in practice for teacher education. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 167-184). Chicago, IL: University of Chicago Press.

Lark, P. Wiseman, D., & Bradley, C. (1990). The minority mentorship project: Changing attitudes of preservice teachers for diverse classrooms. *Action in Teacher Education, 12* (3), 5-11.

Levine, M. (1997). Can professional development schools help us achieve what matters most? *Action in Teacher Education, 14* (2), 63-73.

Lortie, D. (1975). *Schoolteacher: A sociological study.* Chicago: University of Chicago Press.

Loughran, J. (1997). Teaching about teaching: Principles and practice. In Loughran, J., & Russell, T. (Eds.), *Teaching about teaching: Purpose, passion and pedagogy in teacher education* (pp. 57-69). Washington, DC: Falmer Press.

Loughran, J., & Russell, T. (1997). Meeting student teachers on their own terms: Experience precedes understanding. In Richardson, V. (Ed.), *Constructivist teacher education: Building a world of new understandings* (pp. 164-181). Washington, DC.: The Falmer Press.

Lucas, C. J. (1997). *Teacher education in America.* New York: St. Martin's Press.

Marshall, H. H. (1998). Teaching educational psychology: Learner-centered and constructivist perspectives. In N. M. Lambert & McCombs, B. L. (Eds.), *How students learn: Reforming schools through learner-centered education* (pp. 449-473). Washington, DC: American Psychological Association.

McCombs, B. L. (1998). Integrating metacognition, affect, and motivation in improving teacher education. In N. M. Lambert & McCombs, B. L. (Eds.), *How students learn: Reforming schools through learner-centered education* (pp. 379-408). Washington, DC: American Psychological Association.

McIntyre, D. J., Byrd, D. M., & Foxx, S. M. (1996). Field and laboratory experiences. In Sikula, J., Buttery, T. J., & Guyton, E. (Eds.), *Handbook of research on teacher education* (pp. 171-193). New York: Simon & Schuster Macmillan.

Melnick, S. L., & Zeichner, K. M. (1995). *Teacher education for cultural diversity: Enhancing the capacity of teacher education institutions to address diversity issues* (Report No. NCRTL-RR-92-4). East Lansing, MI: National Center for Research on Teacher Learning.

Michalec, P. (1999, April). *Beyond modeling and program coherency: Pedagogical relationships and the education of preservice teachers.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

Miller, P. S., & Stayton, V. D. (1999). Higher education culture: A fit or misfit with reform in teacher education? *Journal of Teacher Education, 50* (4), 290-302.

NASBE Study Group on Teacher Development, Supply, and Demand (1998, October). *The numbers game: Ensuring quantity and quality in the teaching workforce.* Alexandria, VA: National Association of State Boards of Education.

National Commission on Teaching and America's Future. (1996). *What matters most: Teaching for America's future.* New York: Author.

Newman, F., & Wehlage, G. (1995). *Successful school restructuring.* Madison, WI: Center on Organization and Restructuring of Schools.

Noddings, N. (1999). Caring and competence. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 205-220). Chicago, IL: University of Chicago Press.

Northfield, J., & Gunstone, R. (1997). Teacher education as a process of developing teacher knowledge. In Loughran, J., & Russell, T. (Eds.), *Teaching about teaching: Purpose, passion and pedagogy in teacher education* (pp. 49-56). Washington, DC: Falmer Press.

Pierce, J. W., & Jones, B. F. (1998). Problem-based learning: Learning and teaching in the context of problems. In Ohio State University & Bowling Green State University (Eds.), *Contextual teaching and learning: Preparing teachers to enhance student success in and beyond school* (pp. 75-106). Washington, DC: ERIC Clearinghouse on Teaching and Teacher Education.

Posner, G. L., Strike, K. A., Hewson, P. W., & Gertzog, W. A. (1982). Accommodation of a scientific conception: Toward a theory of conceptual change. *Science Education, 66*, 211-227.

Proposed guidelines set bar for education schools. (1999, January 13). *What Works in Teaching and Learning, 31* (1), p. 5.

Rainer, J., & Guyton, E. (1998, February). *Teacher change: The strategies and effects of a constructivist teacher education program.* Paper presented at the annual meeting of the American Association of Colleges for Teacher Education, New Orleans, LA.

Rainer, J. D. (1999) Faculty living their beliefs. *Journal of Teacher Education 50* (3), 192-199.

Rhodes, L. K., & Bellamy, G. T. (1999). Choices and consequences in the renewal of teacher education. *Journal of Teacher Education, 50* (1), 17-26.

Richardson, V. (1997). Constructivist teaching and teacher education: Theory and practice. In Richardson, V. (Ed.), *Constructivist teacher education: Building a world of new understandings* (pp. 3-14). Washington, DC: The Falmer Press.

Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In Sikula, J. (Ed.), *Handbook of research on teacher education* (pp. 102-119). New York: Simon & Schuster Macmillan.

Richardson, V. (1999). Teacher education and construction of meaning. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 145-166). Chicago, IL: University of Chicago Press.

Richert, A. E. (1997). Teaching teachers for the challenge of change. In Loughran, J., & Russell, T. (Eds.), *Teaching about teaching: Purpose, passion and pedagogy in teacher education* (pp. 73-94). Washington, DC: Falmer Press.

Sandholtz, J. H., & Finan, E. C. (1998). Blurring the boundaries to promote school-university partnerships. *Journal of Teacher Education, 49* (1), 13-25.

Schulman, L. S. (1986). Those who understand knowledge growth and teaching. *Educational Researcher, 15* (2), 5.

Slavin, R. E. (1987). Development and motivational perspectives on cooperative learning: A reconciliation. *Child Development, 58*, 1161-1167.

Smylie, M. A., Bay, M., & Tozer, S. E. (1999). Preparing teachers as agents of change. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 29-62). Chicago, IL: University of Chicago Press.

Sosniak, L. A. (1999). Professional and subject matter knowledge for teacher education. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 185-204). Chicago, IL: University of Chicago Press.

Stone, E. (1994). Reform in teacher education: The power and the pedagogy. *Journal of Teacher Education, 45* (4), 310-319.

Swanson, J. (1995). Systemic reform in the professionalism of educators. *Phi Delta Kappan, 77* (1), 36-39.

Teitel, L. (1997). Changing teacher education through professional development school partnerships: A five-year follow-up study. *Teacher College Record, 99* (2), 311-334.

Thomas B. Fordham Foundation. (1999, June 8). *The teachers we need and how to get more of them.* [WWW document] Available: http://www.edexcellence.net/library/teacher.html

Tom, A. R. (1997). *Redesigning teacher education.* Albany, NY: State University of New York Press.

Valli, L. (1994, April). *Learning to teach cross-cultural settings: The significance of personal relations.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Wasley, P. (1999). Teaching worth celebrating. *Educational Leadership, 19,* 8-13.

Weinstein, C. S. (1998). "I want to be nice, but I have to be mean": Exploring prospective teachers' conceptions of caring and order. *Teaching and Teacher Education, 14* (2), 153-163.

Whitford, B. L., & Metcalf-Turner, P. (1999). Of promises and unresolved puzzles: Reforming teacher education with professional development schools. In Griffin, G. A. (Ed.), *The education of teachers* (pp. 257-278). Chicago, IL: University of Chicago Press.

Wineburg, S. S. (1991). A case of pedagogical failure: My own. *Journal of Teacher Education, 42* (4), 273-280.

Wlodkowski, R. J. (1995, April). *Understanding multicultural perspectives: Implications for new teacher roles and professional development experiences.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Yerian, S. Y., & Grossman, P. L. (1993, April). *Emerging themes on the effectiveness of teacher preparation through professional development schools.* Paper presented at the annual meeting of the American Educational Research Association, Atlanta.

Zeichner, K. (1992). *Educating teachers for cultural diversity: Special report.* East Lansing, MI: National Center for Research on Teacher Learning.

Zeichner, K. M., & Hoeft, K. (1996). Teacher socialization for cultural diversity. In Sikula, J., Buttery, T. J., & Guyton, E. (Eds.), *Handbook of research on teacher education* (pp. 525-547). New York: Simon & Schuster Macmillan.